SCOLIOSIS.[1]

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Very little seems to have been done about the condition scoliosis in Australia. It has been suggested that there is not a lot of scoliosis here. A survey carried out by J. Shands, junior, in Delaware showed that there were approximately fifteen persons per thousand with the condition, though only one in a thousand was bad enough to justify radical treatment. It seems reasonable to assume that that distribution would apply to us here. In the past treatment has been essentially conservative, comprising postural exercises, special breathing exercises, and periodic application of plaster jackets or braces. The majority of people are inclined to discontinue that type of treatment of their own free will.

There is little basic knowledge of scoliosis. This is the case even in centres which are up to date and progressive. As there are no clear-cut basic principles, each centre approaches the problem independently.

J. C. Scott, Nuffield Orthopædic Centre, Oxford (1950), has given the subject considerable attention and, by careful study of statistics, has made an effort to analyse the cases to search for possible causes. He considers that the present treatment has been based largely on observations of the natural history. The mechanism of the spinal twist has been studied and, although this does not help in prevention, it is important in management. Scott classifies scoliosis into functional and structural groups. He subdivides structural scoliosis into: (1) idiopathic, (2) congenital, (3) anterior poliomyelitis, (4) rickets, and (5) other causes.

John Cobb, who is in charge of the Scoliosis Clinic at the Hospital for Special Surgery in New York, has also classified structural scoliosis. His classification is as follows:

1. *Osteopathic*: (*a*) congenital, (*b*) thoracogenic, (*c*) other.
2. *Neuropathic*: (*a*) congenital, (*b*) post-poliomyelitis, (*c*) other.
3. *Myopathic*: (*a*) congenital, (*b*) muscular dystrophy, (*c*) other.
4. *Idiopathic.*

It should be realized that a postural scoliosis will not become a structural scoliosis. Hence, when it is obvious that there is no bony structural change, the ordinary treatment, based on posture and muscle tone, will be sufficient; and the patient can be assured that it will not develop into a serious twist. It has been appreciated that all of the structural curves do not progress seriously. It is also appreciated that all those that are going to become severe will do so despite all forms of conservative treatment. The majority of the serious curves progress in the period of puberty; and it is known that, when the iliac apophyses have reached the posterior superior spines, it is reasonably certain that the idiopathic curve will not increase.

J. I. P. James, Institute of Orthopædics, Royal Orthopædic Hospital (1954), has discussed the patterns of idiopathic scoliosis, with particular interest in their age and onset, with a view to determining the prognosis of the curve. The curve can occur in three stages of growth—in the infant, in the juvenile, and in the adolescent stages. The curve may be divided into a primary (major) curve and a secondary (minor) curve. Nowadays the terms "major" and "minor" are frequently used in preference to the older terms. According to the position of the major curve, idiopathic scoliosis is classified as lumbar, thoraco-lumbar, thoracic, combined lumbar and thoracic, or cervico-thoracic. The

[1] A lecture delivered to the Discussion Group of the Australian Physiotherapy Association in New South Wales.

major curve is located by looking for the bodies whose adjacent sides are parallel. Perpendicular lines are drawn from the lowest and the uppermost bodies, and the angle where they intersect is measured; that gives the angle of the curve. These calculations are made from skiagrams which are large enough to allow of the inclusion of the minor curve in most cases, and are prepared with the patient in standing and in lying positions. In an article in *The Journal of Bone and Joint Surgery* (1954), which should be consulted for further details of his method of analysing the curves, James points out that regular careful supervision is necessary to follow the progress of the scoliosis; further X-ray examinations of those patients with curves which are likely to degenerate should be made every three or four months.

The thoracic idiopathic scoliosis is most likely to cause trouble, and particularly when it occurs in the period of infancy. The use of a Milwaukee brace appears to be the only form of conservative treatment which is worth while. If the curve is not progressing, no special treatment is needed. When the curve shows a rapid rate of increase an attempt at correction should be made with turnbuckle plasters of the Risser pattern or by extension followed by a wide spinal fusion operation to hold the corrected position. It is preferable to leave the spinal fusion until the patient reaches the adolescent period, but it can be used with care in rapidly progressing cases when the patient is younger.

There are many other more elaborate methods of treating scoliosis, including the use of the Abbott frame, the Von Lucham frame, and the hammock treatment of Le Measier from Canada. These methods aim to achieve correction by force and then to hold the correct position by plaster. Wedged osteotomy of the vertebral bodies as performed by Roaf, of Liverpool, is another method, and still another is the insertion of a turnbuckle jack within the body to separate the crest of the ilium from the transverse processes to straighten the curve. Several patients have been treated by the latter procedure by Allan, of Liverpool. Osmond Clark has attempted to control rapid progress in young patients by stapling the bodies of the vertebræ together, and also by wiring the transverse processes of the vertebræ. These methods are still experimental and final results have not been published.